

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-70. Canceled.

71. (NEW) Seeding apparatus for metering and delivering seeds for planting in a seed bed, comprising:

a rotatable seed metering element having a row of circumferentially spaced apart apertures on a rotating surface of the metering element;

vacuum generating means arranged to draw air inwardly through said apertures whereby to attract and hold seeds to said apertures; and

means for rotating said metering element,

a feed system for transporting seed from a seed reservoir to said metering element and placing said seed at said rotating surface so that seeds are attracted to and held at said apertures;

release means at a release point on the metering element for releasing seeds held at each said aperture of said rotating surface and carried to said release point; and

delivery means for delivering said seeds to a seedbed,

wherein –

(a) the metering element comprises a drum, the said rotating surface being an external cylindrical surface of the drum; and

(b) in the feed system seeds are accelerated to an increased speed and thereafter placed adjacent to the surface of the drum and the metering apertures at a controlled speed.

72. (NEW) Seeding apparatus according to claim 71 wherein the feed system comprises flow rate control means whereby seed is fed at a controlled flow rate from said reservoir to the drum.

73. (NEW) Seeding apparatus according to claim 71 wherein the velocity of seeds placed adjacent to the row of apertures is controlled to be approximately the same as the speed of the apertures.

74. (NEW) Seeding apparatus according to claim 72 wherein the flow rate control means comprises a variable restriction to flow of seed into the feed system.

75 (NEW) Seeding apparatus according to claim 71 wherein the feed system comprises:

acceleration means whereby seed entering the feed means is accelerated to a speed approximately the speed of the cylindrical surface of the drum; and

velocity control means whereby seed leaving the acceleration means is placed adjacent to the row of apertures and its speed is controlled.

76. (NEW) Seeding apparatus according to claim 75 wherein the acceleration means comprises a chamber in which seed falls downward whereby to be accelerated to an increased speed by the action of gravity on the seed.

77. (NEW) Seeding apparatus according to claim 76 further comprising supporting means for maintaining the drum and the acceleration means substantially level in use.

78. (NEW) Seeding apparatus according to claim 76 wherein the acceleration means further comprises means for redirecting seed reaching a lower part of the chamber into a direction approximately tangential to the drum surface.

79. (NEW) Seeding apparatus according to claim 75 wherein the velocity control means comprises at least one moving belt that engages seed leaving the acceleration means the belt being of controllable speed.

80. (NEW) Seeding apparatus according to claim 79 wherein seed passes between the or a said belt and the surface of the drum over a portion of the circumference of the

drum.

81. (NEW) Seeding apparatus according to claim 75 wherein the velocity control means comprises an adjustable flap and wherein seed passes between the flap and the surface of the drum over a portion of the circumference of the drum.

82. (NEW) Seeding apparatus according to claim 75 wherein the velocity control means comprises a rotating roller whose speed and direction of rotation are controllable and wherein seed leaving the acceleration means passes between the roller and the surface of the drum.

83. (NEW) Seeding apparatus according to claim 75 wherein the velocity control means comprises one or more of a: a moving belt; a rotating roller; and an adjustable flap engaging seed that leaves the acceleration means whereby to control the speed of the said seed leaving the acceleration means.

84. (NEW) Seeding apparatus according to claim 75 wherein the feed system includes an air jet for blowing seed along a path that passes close to the surface of the drum and accelerates the seed to a speed substantially equal to the speed of the surface of the drum.

85. (NEW) Seeding apparatus according to claim 71 wherein:

(a) the feed system places seeds adjacent to the drum surface and apertures over a portion of its circumference;

(b) the release point is circumferentially past the said portion so that seeds held at the apertures are carried beyond the said portion to the release point and at the release point released in a metered seed stream, and

(c) the said portion and the said release point are so positioned that seeds not held at the apertures leave the drum surface in an unmetered seed stream separate from the metered seed stream before reaching the said release point.

86. (NEW) Seeding apparatus according to claim 75 further comprising

recycling means for capturing the unmetered seed stream and returning the unmetered seed to the seed reservoir.

87. (NEW) Seeding apparatus according to claim 71 wherein the release means comprises an air jet nozzle directing an air jet to eject metered seeds off the drum.

88. (NEW) Seeding apparatus according to claim 71 further comprising means for controlling the speed of seeds released from the drum by the release means.

89. (NEW) Seeding apparatus according to claim 71 wherein seeds ejected from the delivery means are directed under a roller rolling on the seedbed whereby to limit seed bounce on the seed bed.

90. (NEW) Seeding apparatus according to claim 71 having electronic sensing means at a point of exit of metered seeds from the delivery system, the sensing means providing output adapted for at least one of:

- (a) establishing exit speed of seeds from the delivery system for the purpose of controlling the seed exit speed and/or the depth of planting of seeds in the seedbed;
- (b) counting seeds delivered;
- (c) monitoring for blockage of the delivery system.

91. (NEW) Seeding apparatus according to claim 71 wherein the row of apertures is one of a plurality of rows of apertures on the drum and wherein the delivery means is adapted to deliver a metered seed stream from each row of apertures to one of a plurality of transversely spaced-apart rows.

92. (NEW) Seeding apparatus according to claim 71 further comprising control means adapted to control at least drum rotation speed, flow rate of seed in the feed system, and seed velocity at the drum surface whereby to provide a selected seed delivery rate related to ground speed and required seed spacing.

93. (NEW) Seeding apparatus according to claim 91 wherein said control means further controls speed of exit of metered seeds from the delivery system.

94. (NEW) A method for metering and delivering seeds for planting in a seedbed including the steps of:

providing a rotatable seed metering element having a row of circumferentially spaced apart apertures on a rotating surface of the metering element;

providing vacuum generating means arranged to draw air inwardly through said apertures whereby to attract and hold seeds to said apertures;

rotating said metering element,

by means of a feed system delivering seed from a seed reservoir to said metering element and placing said seed at said rotating surface so that seeds are attracted to and held at said apertures;

at a release point on the metering element releasing the seeds held at each said aperture and carried to said release point whereby to form a metered stream of seeds; and

delivering said metered stream of seeds to a seedbed,

wherein:

(a) the metering element comprises a drum, the said rotating surface being an external cylindrical surface of the drum; and

(b) the method includes the step of accelerating seed in the feed system to an increased speed and thereafter placing the seed adjacent to the surface of the drum and the metering apertures at a controlled speed.

95. (NEW) A method according to claim 94 including the step of controlling the flow rate of seed that is delivered to the feed system and thence to the drum.

96. (NEW) A method according to claim 94 wherein the controlled speed at which seed is placed adjacent to the drum surface and apertures is approximately the same as the surface speed of the drum.

97. (NEW) A method according to claim 94 wherein seeds entering the feed

system are accelerated by falling through a vertical distance so as to be acted on by gravity.

98. (NEW) A method according to claim 94 wherein seed placed adjacent to the drum surface is maintained adjacent to the drum surface over a portion of the drum surface circumference.

99. (NEW) A method according to claim 98 wherein:

(a) the release point is circumferentially past the said portion so that seeds held at the apertures are carried beyond the said portion to the release point and at the release point released in a metered seed stream, and

(b) the said portion and the said release point are so positioned that seeds not held at the apertures leave the drum surface in an unmetered seed stream separate from the metered seed stream before reaching the said release point.

100. (NEW) A method according to claim 98 including the step of capturing the unmetered seed stream and returning the unmetered seed stream to the seed reservoir.

101. (NEW) A method according to claim 94 wherein delivery of the metered stream of seeds is by a delivery system and the speed of exit of seeds from the delivery system is controlled.

102. (NEW) A method according to claim 94 wherein seeds are metered at a rate sufficient for seed placement at a selectable along-row seed spacing and at a ground speed substantially greater than 20 kilometres per hour, preferably between 30 and 60 kilometres per hour.